



**STATE OF MONTANA
MONTANA DEPARTMENT OF TRANSPORTATION
JOB PROFILE**



Update



Formal Review

Date Submitted _____

SECTION I - Identification

Working Title: Communications Technologist

Department: Transportation

Job Code Number: 492235

**Division & Bureau: Maintenance,
Communication Bureau**

Job Code Title: Communications Technologist

Section & Unit:

Pay Band: 5

Work Address: Various locations

**Position Number: 44001, 44005, 44006, 44009,
44010, 44012, 44014, 44015, 41028, 41036**

Phone: 444-6305



FLSA Exempt



FLSA Non-Exempt



Non-Union



MPEA



Blue Collar

**Profile Completed By: Steve Keller
Communications Bureau Chief**

Work Phone: 406-444-6305

Work Unit Mission Statement or Functional Description:

The MDT's mission is to serve the public by providing a transportation system and services that emphasize quality, safety, cost effectiveness, economic vitality and sensitivity to the environment.

The Maintenance Program provides for repairs and preventive maintenance of state highways, secondary highways, and the various signs and structures within the highway right-of-way. This includes winter plowing and sanding, year-round repairs to the state and secondary highway systems, responding to natural disasters, and the preservation and maintenance of all state maintained roadways, structures, rights-of-way, traffic control devices, buildings and other facilities, staff vehicles, and a fleet of highway maintenance equipment. The division is also responsible for coordinating cooperative agreements with counties for secondary highway maintenance responsibilities. The division protects Montana's and the Federal Government's investment in Montana's highway system and ensures the safety of the traveling public. Maintenance is responsible for: the Equipment Bureau; Communication Bureau; Facilities Bureau; Motor Pool; Maintenance Management System; Maintenance Review; State Sign Shop; Maintenance Support Services; MDT's Disaster and Emergency Services; Hazardous Waste Program; the Underground Storage Tank (UST) Program; and MDT's Noxious Weed Program.

The Communications Bureau coordinates all engineering, installation, and maintenance for: MDT land mobile communication systems including all two-way mobile and portable radios, , relays, and base stations, and MDT's remote weather information systems (RWIS). The Communications Bureau assists in the design, installation, and maintenance of the local and wide area computer networks; the land line telecommunication systems (land line telephone) utilized throughout the Department; the permanent and portable variable message signs (VMS) used across the state; the statewide fuel systems for MDT owned fuel sites; and the traffic signal and roadway lighting systems within the state maintained highway right-of-way. The Bureau also manages and oversees the cell phones and smartphones utilized by MDT personnel to complete their daily tasks.

Describe the Job's Overall Purpose:

To assist in the design, provide oversight in the construction and installation of, and to operate and maintain a land mobile radio communication system for the Department of Transportation and other state and federal agencies. This is accomplished by engineering a functional system, by managing the placement and procurement of the radio communications equipment, and being directly responsible for the correct and efficient operation and maintenance of the radio system. To assist in the design; to install, operate and maintain MDT's remote weather information system (RWIS) to provide up to date road/weather conditions to MDT personnel and the traveling public. To analyze and guarantee reliable functionality of divisional computer local area networks (LAN), departmental computer wide area networks (WAN), PBX telephone systems and solid state voice messaging systems for road and construction reports. Sustain necessary wireless telecommunication services and equipment across the state. To provide the expertise to ensure reliable performance, calibration and operation of a statewide fueling network and automatic tank gauging used for the electronic accounting and inventory of state fuels. To provide the support of the department's statewide interactive video conferencing system. To engineer, analyze, and manage the performance and placement of a variety of other electronic equipment statewide as necessary.

SECTION II - Major Duties or Responsibilities

This section should be a clear concise statement of the position's major duties and the approximate percent of work time for each duty

% of Time

Under remote supervision, the incumbent will design, develop and present concepts and system layouts to the Communications Bureau Chief or Telecommunications System Analyst. Using sophisticated diagnostic equipment and methodology in order to provide efficient inter/intra departmental communication and operation, the incumbent will manage the performance, oversee the placement,, conduct analyses and calibration of complex electronic communications systems. Co-ordinate system implementation within their area, implement network changes, analyze and resolve computer system and network problems. Submit design proposals, co-ordinate the placement of and manage the integrity of statewide automated fuel dispensing and tank monitoring systems. Assist in the administration of wireless telecommunications services throughout the state.

A: Communication Systems Maintenance and Repair

65%

Insures proper performance of communication systems; local area network and wide area network electronic equipment; fuel network equipment; personal communicators; interactive video network and the computer software used in programming and diagnosing these systems.

Manage the performance and placement of complex electronic equipment associated with land mobile communications, which provide for the efficiency of day to day operations within the department and other agencies.

Evaluates and improves land/mobile communication system operation through the use of intellectual analysis and principles of troubleshooting in order to isolate and resolve obstacles which can hinder reliable land mobile communications.

Manage divisional telecommunication systems in order to meet clientele obligations. Develops divisional telecommunication network plans by making recommendations concerning the most appropriate implementation strategy. Completes complex and diverse assignments with regard to mobile/stationary radio equipment in remote areas. Uses a wide variety of specialized computer software to program, interconnect, align, and diagnose microprocessor-based equipment. Restores performance of complex electronic circuits, associated with land mobile communications, to component level using engineering schematics, electronic theory, and specialized test equipment identifying faulty parts minimizing repair costs of circuit card or equipment replacement.

Manage the performance and placement of complex electronic equipment, associated with departmental computer local area networks and the wide area network, to support essential and critical data transfers regarding highway construction and maintenance activities to and from all area offices across the state. Provides expertise and fundamental data used to develop network plans, design, and implementation of computer network wiring in statewide departmental complexes. Analyzes and upgrades wiring systems using sophisticated network tools and test equipment specific to data transmission. Relying upon knowledge of computer science, resolves personal computer connectivity and network problems. Reestablish network service to the equipment level using a fundamental understanding of operating systems and equipment associated with local area networks such as bridges, gateways, modems, servers, network cards and software applications.

Manage the placement and sustain the reliable performance of the statewide automated fuel dispensing and tank monitoring systems used for efficient accountability of fuel distribution. Installs inter-system wiring, terminals, site controllers, and point of sale terminals, used for controlling fuel pumps and information transfer of data, necessary for fuel accounting and billing. Using computer software, programs site specific parameters and links the system to the nationwide fueling network. Uses complex test equipment and password protected security diagnostic features along with a thorough network understanding to resolve system failures.

Ensures proper placement, manages desired optimal performance of complex electronic, electrical, and electromechanical equipment other than that associated with telecommunications equipment to support the safety of the public on roadways and in aircraft, persons with weather sensitive activities, and employees of the department. This includes, but is not limited to, National Weather Service transmitters, data collection and transmission equipment, Traveler Information Systems (TIS), automated hazard equipment, emergency lighting and siren equipment, distance measuring devices, Federal Aviation Administration (FAA) non-directional beacon navigation devices, cellular phone equipment and new equipment often unique and unprecedented. Analyzes equipment capabilities, design specifications and system restrictions to determine if equipment meets the needs of clientele.

B: Communication Systems Design and Construction Oversight

25%

Provides expertise, fundamental data and resources to the Communications Bureau Chief and Telecommunications System Analyst, substantiating the advantages and disadvantages pertaining to large-scale departmental projects. Make general project decisions insuring departments interests have been met. Acts as a technical liaison between the Communications Bureau, contractors and department personnel regarding the design and development of new control systems, new site locations, and equipment specifications of buildings, towers and utilities. Monitors progress by directing contract employees progress and departmental employees on large technical projects. Researches new replacement materials estimating monetary benefits and dependability. Ensures appropriate procedures specified by Federal Communications Commission rules and regulations and departmental policies have been followed so that agencies serviced are not in violation. Using the knowledge of principles of electrical/electronic engineering, develops network documentation and schematic diagrams for future reference. Generates new ways of configuring systems and aligning inter-system parameters in order to save the department time and revenue. Develops solutions to correct problems as they arise.

C:Other Duties

10%

Initiates equipment transfers and data entries concerning divisional communications equipment preventative maintenance inventory and schedules. Provides the analytical aptitude and expertise to answer questions regarding job related divisional problems, making decisions on appropriate action needed and pursuing the objective. Maintains divisional logs, equipment calibration cycles, divisional interagency frequency authorization records, and weekly work schedules and progress reports. Researches and procures necessary materials and parts for equipment repair and readiness. Researches and writes bid specifications for the purchase of new equipment needed to sustain the departments statewide networks and presents them to supervisors for approval.

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- 1. *The following duties and/or specific tasks listed under section II above are considered “essential functions” because they require specialized expertise and skill and are the primary reasons the job exists (they must be performed by this position with or without accommodations): Duties A & B***

The following mental and physical demands are associated with these essential functions:

PHYSICAL

- Travel modes include snow shoes, snow mobiles, ATV, four wheel drive, horseback, and helicopter.
- Extreme adverse weather conditions
- Lift 180 pounds
- Bend, twist, crawl
- Climb in excess of 300 feet
- Exposure to high voltage
- Maneuver in restrictive spaces

MENTAL

- Work in stressful situations
- Ability to multi-task
- Demands for accuracy in all aspects of work
- Ability to meet inflexible deadlines
- Decision making that affects public health and safety
- Computing arithmetic operations
- Comparing data
- Compiling information
- Analyzing
- Coordinating
- Synthesizing

2. Does this position supervise others? ☐ Yes ☒ No

Number directly supervised:

Position Number(s) of those supervised:

3. Attach an Organizational Chart.

SECTION III - Minimum Qualifications - List minimum requirements for the first day of work.

Critical knowledge and skills required for this position:

KNOWLEDGE:

Requires a high order of analytical ability combined with knowledge of land mobile radio communication and telecommunication methodologies, principles and practices. Working knowledge of the Federal Communications Commission (FCC) rules and regulations, local, state and federal policies, specifications and guidelines as they apply to the needs of the agencies serviced. Must have knowledge of the principles of electrical/electronics engineering with emphasis on land mobile radio communications and telecommunications. Must have thorough knowledge of the installation, maintenance and repair of specialized digital and analog electronic equipment used within the industry. Must have an extensive knowledge of principles and practices associated with WAN's, LAN's and the ability to apply aspects of network design. Working knowledge of the National Electrical Code, and standards from the National Electrical Manufacturers Association.

SKILLS:

Extensive skills in the use of complex electronic analyzing equipment, system analyzers, spectrum analyzers, time domain reflectometers, miniature electronics soldering/desoldering equipment, local area network analyzers, computers and associated software packages used in the design, programming, diagnostics and maintenance of complex electronic and communications systems. Motorized vehicle handling skills including operating four-wheel drive pickups, ATVs, and snowmobiles in unstable terrain. Specialized safety skills needed for erecting, climbing and performing installation of antennas on towers.

Behaviors required to perform these duties:

See MDT Core Behaviors

Education:

Check the one box indicating minimum education requirements for this position for a new employee the first day of work:

- | | |
|---|---|
| <input type="checkbox"/> No education required | <input checked="" type="checkbox"/> Related AAS/2-years college/vocational training |
| <input type="checkbox"/> High school diploma or equivalent | <input type="checkbox"/> Related Bachelor's Degree |
| <input type="checkbox"/> 1-year related college/voc. training | <input type="checkbox"/> Related Master's degree |

Please specify the acceptable fields of study:

Acceptable: The position requires two-year degree or certification in electronics and telecommunications.

Other education, training, certification, or licensing required (specify):

Retain recognized professional certification in the field of telecommunications, such as a general class Federal Communications Commission (FCC) Radio Telephone Operators License, Personal Communications Industry Association (PCIA), or Association of Public safety and Communications Officials (APCO).

Must have knowledge of the principles of electrical/electronic engineering with emphasis on land mobile radio communications and telecommunications.

Experience:

Check the one box indicating minimum work-related experience requirements for this position for a new employee the first day of work:

- | | |
|---|---|
| <input type="checkbox"/> No prior experience required | <input checked="" type="checkbox"/> 3 years |
| <input type="checkbox"/> 1 year | <input type="checkbox"/> 4 years |
| <input type="checkbox"/> 2 years | <input type="checkbox"/> 5 or more years |

Other specific experience (optional): Three years of technical experience specific to Land mobile radio communication including project development, system installation and working familiarity with various systems and network designs.

Alternative Qualifications:

This agency will accept alternative methods of obtaining necessary qualifications.

- ☒ Yes ☐ No

Alternative qualifications include:

Equivalent combinations of education and experience may be considered on a case by case basis.

SECTION IV – Other Important Job Information



Fingerprint background check



Valid driver's license

Other information including working conditions such as shifts, lifting requirements, travel or hours.

The incumbent must be able to perform work activities under periodic stressful situations. Be in a travel status that often requires the employee to be away from home for consecutive weeks at a time. Travel alone in excess of 25,000 (twenty five thousand) miles annually, using various modes of transportation including (but not limited to) snow shoes, snowmobiles, ATVs, four wheel drive pickups, horseback, and helicopter under normal to extremely adverse weather conditions in order to access critical sites located in populated or remote mountain top locations throughout the state. To be able to lift or move heavy objects (180 pounds), including electronic equipment and snowmobiles. The ability to place radios and other electronic devices in vehicles and equipment which requires all types of lifting and maneuvering in cumbersome positions and restrictive spaces such as under dashes and in trunks. Must be able to safely climb towers and utility poles and work at heights in excess of 300 (three hundred) feet for long periods of time in all types of weather conditions. Exposure to lethal high voltages, high levels of radio frequency radiation, sulfuric acids, solvents, and lead products. Potential exposure to deadly airborne virulent diseases such as hantavirus.

SECTION V – Signatures

Signature indicates this statement is accurate and complete.

Employee:

Name: _____ Title: _____

Signature: _____ Date: _____

Immediate Supervisor:

Name: _____ Title: _____

Signature: _____ Date: _____

Bureau Chief:

Name: _____ Title: _____

Signature: _____ Date: _____

Division/District Administrator:

Name: _____ Title: _____

Signature: _____ Date: _____

Department Designee:

Brent Rabe/Designee

Human Resources Administrator
Human Resources Division

Signature: _____ Date: _____